Trend Study 15-2-99

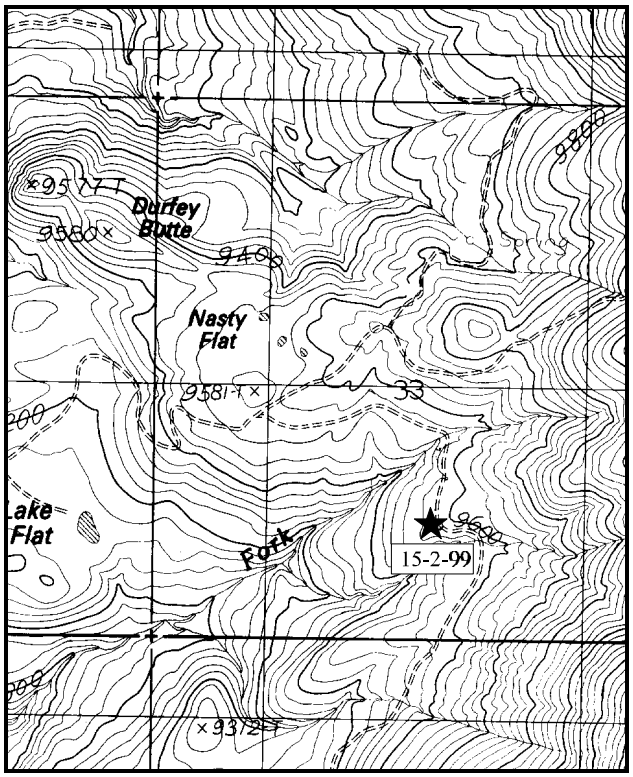
Study site name: Nasty Flat . Range type: Quaking Aspen .

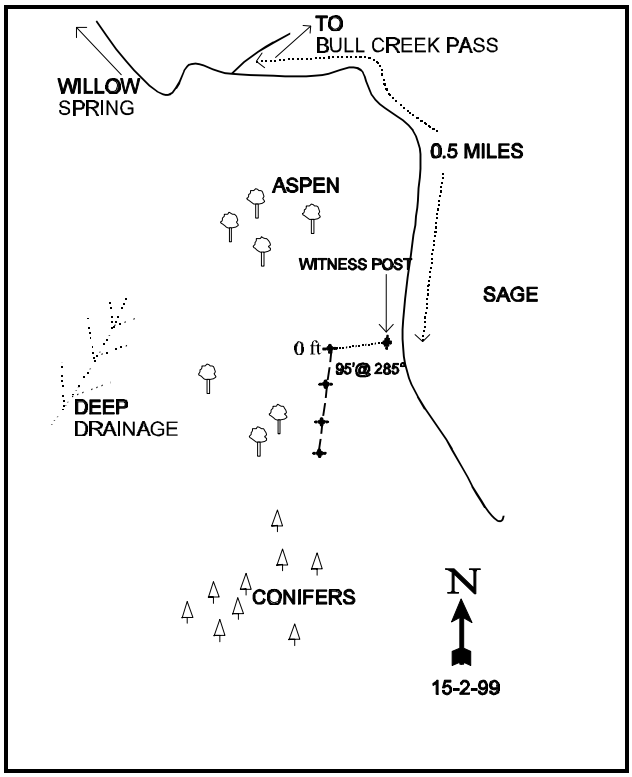
Compass bearing: frequency baseline 213°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34 & 71ft), line 3 (59ft).

LOCATION DESCRIPTION

From the McMillan (McClellan) Spring Campground (BLM), proceed east on the road past Willow Spring and the DWR cabin for 2.7 miles to a fork. Stay right and continue 0.5 miles. The transect is located in the patch of aspens below the road. A witness post is located on the right side of the road. From this fence post, walk 95 feet bearing 285° to the start of the baseline. The first stake is under the aspens, and tagged with a red browse tag, #7852.





Map Name: Mount Ellen Diagrammatic Sketch

Township 31S , Range 10E , Section 33 UTM 4212681.435 N, 516489.431 E

DISCUSSION

Trend Study No. 15-2 (38-2)

The Nasty Flat study is located within the only aspen stand sampled in the Henry Mountains range trend monitoring effort. The aspen type is not very extensive and does not occur often in this management unit. The site is located at an elevation of 9,500 ft on a moderately steep (33%), west facing slope. The site was selected to include an area of deer summer range which is more critical for deer than the winter range on the unit. This is a mature aspen stand with a considerable number of young aspen in the understory as well as a few conifers. When the baseline was lengthened in 1994, a more dense portion of the aspen was sampled. Total canopy cover was estimated at almost 84%. In 1999, the baseline was realigned to better sample aspen regeneration and animal use near the edge of the aspen clone. Pellet group data from 1999 indicate light animal use with 13 deer and 12 cow days use/acre (32 ddu/ha and 30 cdu/ha), however this sight was read early in the season (June 9). A few bison pats from the previous fall were sampled as well.

The soil is a loam with substantial amounts of organic matter in the surface horizon. Erosion is not a problem on the site due to the high litter cover provided from dead aspen leaves. Erosion control efforts have been undertaken by the BLM to limit erosion in nearby drainages with fabric check dams. Most of these have been effective in holding soil on the steep, eroded slopes of the area. The soil is moderately acidic (pH 5.9) with moderately deep soil with an estimated effective rooting depth of over 19 inches. Rock is uniformly scattered throughout the profile.

Aspen is the key browse species. During the 1987 reading, aspen density was estimated using three 1/200 acre density plots which estimated a total of 5,132 trees/acre. Ninety-four percent of the trees were young trees growing beneath the aspen canopy. About 64% of these young plants were moderately or heavily hedged (40-60% of the twigs are browsed). In 1994, point quarter data estimated the aspen density at 2,396 trees/acre with an average diameter of 2.4 inches. Aspen were mistakenly not counted in the shrubs strips and not classified for form class and vigor in 1994, so no comparisons can be made with the 1987 data. Point quarter data from 1999 estimate the aspen population to be 4,797 trees/acre. Much of the disparity in aspen density over sampling years is due to the realignment of the baseline in 1999. Currently, the majority of the population is represented by young plants (75%). Most of the aspen population sampled in 1999 shows light use and good vigor, with several of the smaller trees being used as antler rubs by deer. In 1999, aspen had an estimated canopy cover of 61%.

Mountain big sagebrush was sampled more accurately in 1999 after the baseline was relocated nearer to the edge of the aspen clone. However, this species is not considered key as this site is a summer range. The population is currently estimated at 1,460 plants/acre, and is represented by mostly mature, lightly utilized plants that are low in stature (average height/crown of 12" x 20"). Limber pine and Douglas fir were also encountered in 1994 with densities of 111 and 65 trees/acre respectively. The majority of the limber pine were young as average diameter was estimated at only 1.5 inches. Douglas fir averaged 5.8 inches in diameter. In 1999, point quarter estimated Douglas fir at 105 trees/acre with a mean stem diameter of 3 inches, and an overhead canopy cover of 9%. Limber pine was estimated at 76 trees/acre with a mean stem diameter of 2 inches, and has a canopy cover of 2%. Less abundant shrubs that were sampled include snowberry and Oregon grape.

The herbaceous understory is dominated by perennial species. The increasers *Stellaria jamesiana* and *Taraxacum officinale* are the most abundant forbs, far exceeding the number of more desirable species. Currently, these two species make up 73% of the forb cover, and 39% of the total herbaceous cover. Nested and quadrat frequencies for these species decreased in 1999, mostly due to the baseline being moved from beneath the aspen canopy to the edge. The key grass species are mutton bluegrass and slender wheatgrass which account for 63% of the grass cover and 30% of the total herbaceous cover. From 1994 to 1999, mutton bluegrass significantly decreased in nested frequency, while slender wheatgrass and elk sedge significantly

increased. Again, the baseline was moved in 1999 which may account for some of these changes. The site fits most closely with the description given by Mueggler & Campbell (1986) as a Populus tremuloides/Symphoricarpos oreophilus/Carex geyeri community type. They indicate that this type is often a climax type that may have some incidental conifers present, but they aren't expected to dominate the site.

1994 TREND ASSESSMENT

Protective ground cover is nearly 100% on the site, so erosion is minimal. Soil trend is stable. Aspen is the primary browse species on the site. During the 1994 reading, aspen was mistakenly not classified for form and vigor classes because it was a tree species so no comparisons can be made. Other browse on the site are few in number and are of little importance. The herbaceous understory is diverse and fairly abundant. Forbs are dominated by the increasers dandelion, and tuber starwort. Since 1987, sum of nested frequencies for grasses have declined, while those of forbs have increased. Overall, nested frequencies of grasses and forbs combined have remained similar to those of 1987.

TREND ASSESSMENT
soil - stable
browse - stable, but unimportant on this summer range site
herbaceous understory - stable

1999 TREND ASSESSMENT

Trend for soil is stable due to abundant litter cover, and minimal bare ground present. Direct comparisons for browse are difficult as the baseline was relocated in 1999. Trend for the key browse (aspen) appears stable. Seventy-five percent of the population consists of young plants, use is mostly light, and vigor good. Cover and sum of nested frequencies of perennial grasses and forbs decreased from previous readings. However, this decrease, especially in forbs, is likely due to the relocation of the baseline. Once again, direct comparisons with earlier readings is difficult, but apparent trend appears stable.

TREND ASSESSMENT
soil - stable
browse - stable
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 15 , Study no: 2

Type	Species	Nested Frequency '87	'94	'99	Quadrat Frequency '87	'94	'99	Average Cover % '94	'99
G	Agropyron trachycaulum	$_{b}$111	$_{a}$88	$_{b}$110	51	35	50	.41	1.14
G	Bromus inermis	$_{b}$51	$_{a}$4	$_{a}$4	23	2	2	.03	.03
G	Carex geyeri	$_{a}$4	$_{a}$13	$_{b}$70	3	4	29	.26	1.02
G	Festuca ovina	$_{b}$5	$_{a}$-	$_{ab}$2	3	-	1	-	.00
G	Poa fendleriana	$_{b}$259	$_{b}$236	$_{a}$125	92	82	51	4.14	1.50
G	Sitanion hystrix	$_{b}$10	$_{a}$-	$_{b}$10	5	-	4	-	.02
G	Stipa lettermani	$_{a}$1	$_{b}$66	$_{b}$49	1	25	20	1.86	.42
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		441	407	370	178	148	157	6.71	4.15
Total for Grasses		441	407	370	178	148	157	6.71	4.15
F	Achillea millefolium	-	-	3	-	-	1	-	.00
F	Agoseris glauca	-	6	3	-	2	1	.01	.00
F	Allium spp.	-	-	4	-	-	2	-	.06
F	Androsace septentrionalis (a)	-	3	7	-	1	2	.00	.01
F	Arabis drummondi	13	16	19	5	8	8	.09	.09
F	Astragalus spp.	-	69	-	-	27	-	1.47	-
F	Calochortus nuttallii	4	-	4	2	-	2	-	.01
F	Chenopodium fremontii (a)	-	5	-	-	2	-	.01	-
F	Cymopterus lemmonii	$_{a}$3	$_{a}$-	$_{b}$4	1	-	3	-	.01
F	Descurainia pinnata (a)	4	-	-	2	-	-	-	-
F	Erigeron eatonii	$_{a}$15	$_{b}$27	$_{b}$66	7	12	27	.09	.54
F	Erigeron spp.	4	-	-	2	-	-	-	-
F	Fritillaria atropurpurea	-	-	4	-	-	2	-	.01
F	Penstemon watsonii	41	21	39	18	11	18	.17	.34
F	Phlox longifolia	22	16	25	8	7	12	.09	.11
F	Physalis spp.	-	3	-	-	1	-	.00	-
F	Sedum lanceolatum	$_{ab}$1	$_{a}$-	$_{b}$6	1	-	3	-	.06
F	Senecio spp.	$_{b}$13	$_{a}$-	$_{a}$-	7	-	-	-	-
F	Stellaria jamesiana	$_{b}$282	$_{b}$277	$_{a}$172	99	96	70	2.97	1.07
F	Taraxacum officinale	$_{b}$187	$_{ab}$187	$_{a}$141	73	64	59	5.84	2.45
F	Unknown forb-perennial	23	-	-	10	-	-	-	-
F	Vicia spp.	3	-	-	1	-	-	-	-
F	Viola spp.	$_{a}$-	$_{b}$52	$_{a}$-	-	23	-	1.12	-
Total for Annual Forbs		4	8	7	2	3	2	0.01	0.00
Total for Perennial Forbs		611	674	490	234	251	208	11.88	4.78
Total for Forbs		615	682	497	236	254	210	11.90	4.79

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 15 , Study no: 2

Type	Species	Strip Frequency '94	Strip Frequency '99	Average Cover % '94	Average Cover % '99
B	Artemisia tridentata vaseyana	12	37	.16	1.01
B	Juniperus communis	1	0	1.00	-
B	Mahonia repens	0	1	-	-
B	Pinus flexilis	0	3	.46	.56
B	Populus tremuloides	0	66	2.21	1.58
B	Pseudotsuga menziesii	0	18	.85	3.06
B	Ribes velutinum velutinum	1	0	.21	-
B	Symphoricarpos oreophilus	4	4	.30	.15
Total for Browse		18	129	5.21	6.38

CANOPY COVER --
Herd unit 15 , Study no: 2

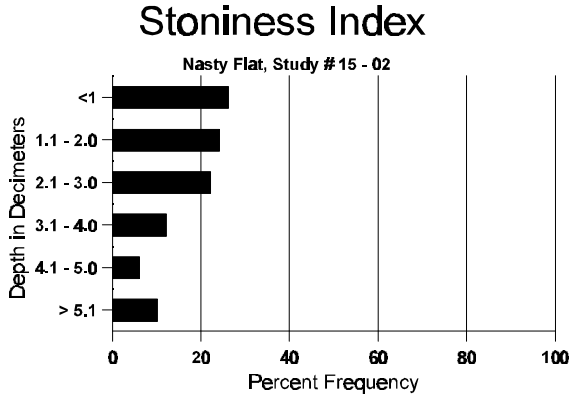
Species	Percent Cover '99
Pinus flexilis	2
Populus tremuloides	61
Pseudotsuga menziesii	9

BASIC COVER --
Herd unit 15 , Study no: 2

Cover Type	Nested Frequency '94	Nested Frequency '99	Average Cover % '87	Average Cover % '94	Average Cover % '99
Vegetation	338	307	4.50	24.53	15.80
Rock	45	106	1.00	.66	6.27
Pavement	19	11	0	.03	.02
Litter	395	391	93.75	77.49	82.88
Cryptogams	-	2	0	0	.03
Bare Ground	98	52	.75	1.26	1.17

SOIL ANALYSIS DATA --
Herd Unit 15, Study # 02, Study Name: Nasty Flat

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
19.2	39.5 (17.7)	5.9	49.3	30.2	20.6	5.4	31.3	204.8	0.5



PELLET GROUP DATA --
Herd unit 15 , Study no: 2

Type	Quadrat Frequency '94	Quadrat Frequency '99	Pellet Transect Days Use/Acre (ha) '99
Deer	5	5	13 (32)
Cattle	-	1	12 (30)
Buffalo	-	-	3 (7)

BROWSE CHARACTERISTICS --
Herd unit 15 , Study no: 2

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	99	18	-	-	-	-	-	-	-	-	18	-	-	-	360			18
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	6	-	-	1	-	-	-	-	-	7	-	-	-	140	8	11	7
	99	51	-	-	-	-	-	-	-	-	51	-	-	-	1020	12	20	51
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	99	4	-	-	-	-	-	-	-	-	-	-	-	4	80			4
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	180			9

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	07%	+79%
'99	00%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'87	0		0%
	'94	300		7%
	'99	1460		5%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus communis																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	14	73	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	20			-
'99	0			-

Mahonia repens																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100	3	17	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	0			-
'99	100			-

Pinus flexilis																		
S	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	66	Dec:		-
'94	0			-
'99	60			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Populus tremuloides																		
S	87	8	1	-	-	-	-	-	-	-	9	-	-	-	600			9
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	26	29	17	-	-	-	-	-	-	71	1	-	-	4800			72
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	94	-	-	-	-	-	5	8	-	106	-	-	1	2140			107
M	87	-	-	-	-	-	-	1	3	-	4	-	-	-	266	393	157	4
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	7	-	-	-	-	-	-	24	-	31	-	-	-	620	-	-	31
D	87	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	4	-	-	-	-	-	-	-	-	1	-	2	1	80			4
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	800			40

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	39%	22%	00%
'94	00%	00%	00%
'99	00%	00%	03%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'87	5132	Dec:		1%
'94	0			0%
'99	2840			3%

Pseudotsuga menziesii																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	22	-	-	-	-	-	-	-	-	22	-	-	-	440			22
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	3	-	3	-	-	-	60	-	-	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	0			-
'99	500			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ribes velutinum velutinum																		
Y	87	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	15	48	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	100%	00%	00%	-70%
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	66	Dec:	-
	'94	20		-
	'99	0		-

Symphoricarpos oreophilus																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
M	87	-	-	2	-	-	-	-	-	-	2	-	-	-	133	14	16	2
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	19	28	3
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40	20	30	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	100%	00%	-40%
'94	00%	00%	00%	+64%
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	133	Dec:	-
	'94	80		-
	'99	220		-